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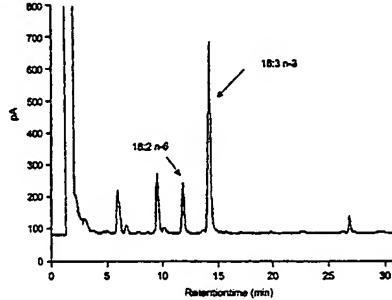
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(54) Title: NOVEL METHOD FOR THE PRODUCTION OF POLYUNSATURATED FATTY ACIDS

WO 2004/057001 A2



(57) Abstract: The present invention relates to an improved process for the specific production of poly-unsaturated omega-3 and omega-6 fatty acids and a process for the production of triglycerides having an increased content of unsaturated fatty acids, in particular omega-3 and omega-6 fatty acids having at least two double bonds and a 20 or 22 carbon atom chain length. The invention relates to the production of a transgenic organism, preferably a transgenic plant or a transgenic microorganism, having an increased content of fatty acids, oils or lipids containing C20- or C22-fatty acids with a delta-5, 7, 8, 10 double bond, respectively due to the expression of a delta-8-desaturase and a delta-9-elongase from organisms such as plants preferably Algae like Isochrysis galbana or Euglena gracilis. In addition the invention relates to a process for the production of poly unsaturated fatty acids such as Eicosapentaenoic, Arachidonic, Docosapentaenoic or Docosahexaenoic acid through the co-expression of a delta-8-desaturase, a delta-9-elongase and a delta-5 desaturase in organisms such as microorganisms or plants. The invention additionally relates to the use of specific nucleic acid sequences encoding for the aforementioned proteins with delta-8-desaturase-, delta-9-elongase- or delta-5-desaturase-activity, nucleic acid constructs, vectors and organisms containing said nucleic acid sequences. The invention further relates to unsaturated fatty acids and triglycerides having an increased content of at least 1 % by weight of unsaturated fatty acids and use thereof.



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